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25X1A

NRO REVIEW COMPLETED

26 December 1962

MEMORANDUM FOR THE RECORD

SUBJECT : 18 December 1962 Status - OXCART Engine Main Fuel Control Pilot Lot Program

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REFERENCE: [redacted] dated 10 December 1962 titled "3 December Status - OXCART Engine Main Fuel Control Pilot Lot Program"

1. Subject status was reviewed [redacted] on 18 December and appears as follows:

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a. Control numbers 19 and 31 have been delivered to Hartford. Number 19 was installed on engine 209 which has successfully completed the engine final acceptance test. Number 31 has been installed in engine 210 which is now being mounted for the engine final acceptance test.

Control number 22 has completed acceptance test and is being processed for delivery to Hartford.

b. A summary of the attachment which presents detailed status of subject program as of 18 December 1962 indicates the following status change since 16 November 1962:

Status	Number of Units				
	As of 11/16	As of 11/27	As of 12/3	As of 12/10	As of 12/18
Delivered	0	0	0	0	2
Prepare for delivery	0	0	0	0	1
Calibration after hot test	0	1	1	4	4
On hot test	1	1	3	2	0
On cold test	3	7	6	4	6

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Control System

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Status	Number of Units				
	As of 11/16	As of 11/27	As of 12/3	As of 12/10	As of 12/18
In final assembly	3	4	4	4	1
*Fabrication	8	3	3	3	3
Total	15	16	17	17	17

*These numbers reflect units in pilot lot program only. Thirteen additional follow-on units are also in fabrication.

2. Since release of reference memorandum, Headquarters learned of the contractor's decision to deliver units 28 and 31 without any hot test and to deliver units 18, 22, and 24 with the hot endurance, but without the hot calibration portion of the acceptance test. In order to appreciate the wisdom of this decision, Mr. Kiefer and the writer visited P&W Florida on 13 December. The basis for the decision was presented as follows:

a. Inability of the speed governor servo and the speed governor pilot valve to pass hot test without seizure was the primary durability problem prior to 16 November. Since 16 November six controls, as indicated separately on the attachment, have accumulated 182 hours of hot testing without distress in these areas. The five expedited units to be delivered with the abbreviated acceptance test in all cases have a bill of material similar to the six units which have had the hot test in terms of incorporation of durability fixes, surface finish improvement, and detailed reinspections. In addition, three of the five expedited units also incorporate the 18 Y+ accuracy changes while only one of the six units having hot test has the 18 Y+ accuracy changes.

b. Since 16 November eight separate component tests involving the speed governor pilot valve with the same surface finish improvements as incorporated in the five expedited controls have accumulated 351 hours of hot time without indication of distress.

c. Since 16 November component testing involving the speed governor servo with the same bore concentricity and diametral clearance improvements as incorporated in the five expedited controls has accumulated 192 hours of

hot time on one servo under a continuous side load equal to twice the design requirement without distress. 192 hours is equivalent to 69,225 cycles which is tantamount to 300 hours of engine operation.

d. Since 16 November, further testing involving the speed governor servo has indicated a measure of the improvement afforded by the teflon lubricity additive which was not permitted during acceptance testing prior to 16 November. Two tests were conducted using identical servos under identical 450°F fuel and four times design side load conditions. The test conducted without the additive failed due to excessive wear at 5,000 cycles, while the test conducted with the additive was terminated for inspection at 18,000 cycles with the servo and the bore in good condition.

3. On 27 November, follow-on units 36 through 49 were scheduled to finished stores from 30 November to 19 December respectively. They are now scheduled to finished stores from 21 December to 5 February 1963 respectively. Unit 36 is a late February delivery commitment which allows from 9 to 10 weeks for assembly and test. Experience to date indicates that from 6 to 8 weeks may be required for assembly and test. Casting quality coupled with repair facility overloading as a result of pilot lot program requirements is the reason cited for this slippage. Examination of internal [redacted] housing casting processing indicates that of the approximate total of 70 castings in process, 16 have progressed through machining and pressure test and that 7 of these 16 are in final inspection just prior to delivery to finished stores. This indicates that the specific shortages affecting particularly the early portion of the follow-on units starting with number 36 are probably not of an insurmountable nature. At the same time, this situation is indicative of a continuing harassment involving casting repair requirements during processing until newer improved castings, some of which are in the earlier stages of processing, are received in enough quantity and progress far enough in order to alleviate the high repair rates inherent with the present older castings. 25X1A

4. With the apparent improvement in pilot valve and servo durability, considerable engineering effort is being shifted to resolution of the functional problems resulting in excessive calibration time.

SECRET

[redacted] 25X1A
Development Division
GSA-DD/R

Attachment

25X1A [redacted]:DD/OSA:hmj (26 December 1962)

Distribution:
1 - DD/R
2 - AD/OSA
3 - C/DD/OSA
4&5 - DD/OSA
6 - TAMS/OSA
7 - APCIG-5
8 - MB/OSA
9 - DD/OSA (Chrono)

Attachment
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PILOT LOT PROGRAM STATUS AS OF 18 DECEMBER 1962

First Block (7) Serial Number	25	22	16	27	28	18	19
Status	Calib. after hot	Prep. Divy.	Calib. after hot	Cold Test	Cold Test	Calib. after hot	Divd. (209)
Hot Time Since 11/16 (hrs.)	47	17	42	0	None sched.	62	7
Cam Schedule	X	X	X	X	X	Y	X
Expedited Delivery		*			*	*	
Standard Durability Changes	*	*	*	*	*	*	*
18 Y+ Accuracy Changes				*	*		

Second Block (10) Serial Number	33	34	21	20	24	32	31	30	35	36
Status	Fab.	Fab.	Cold Test	Final Assy.	Calib. after hot	Cold Test	Divd. (210)	Cold Test	Cold Test	Fab.
Hot Time Since 11/16 (hrs.)	0	0	0	0	7	0	None Sched.	0	0	0
Cam Schedule	X	X	X	X	X	X	X	X	X	X
Expedited Delivery					*		*			
Standard Durability Changes	*	*	*	*	*	*	*	*	*	*
Exploratory Durability Changes	*	*								
18 Y+ Accuracy Changes	*	*	*	*	*	*	*	*	*	*